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READ ABOUT SCIENCE 6

# ELECTRICITY

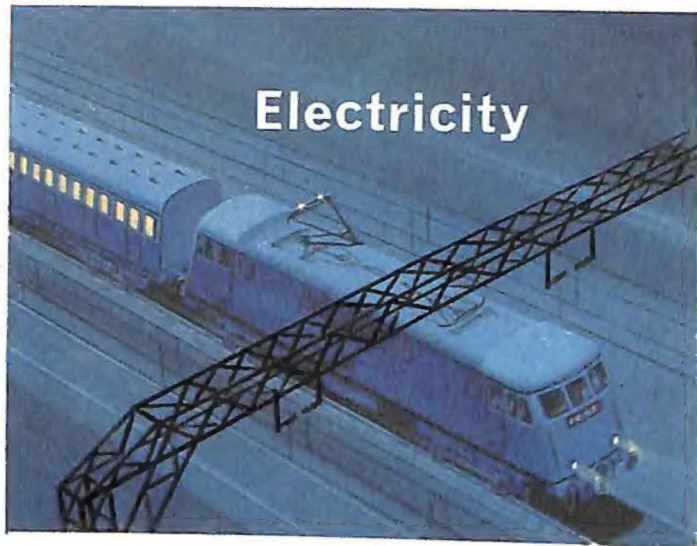


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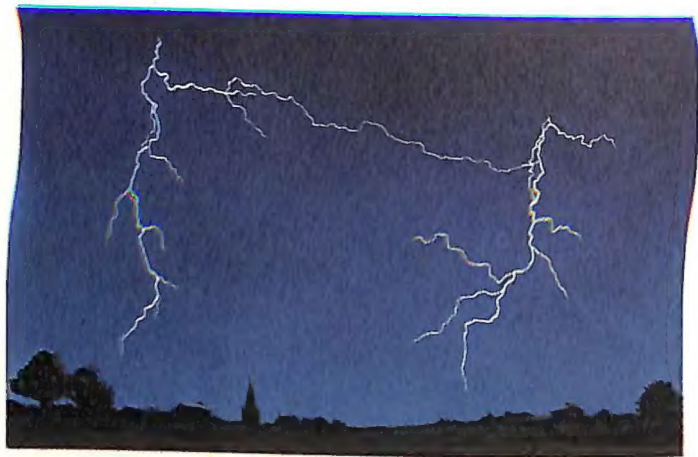


J. L. P. V. R. MURDAS  
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Every day electricity is used in hundreds of ways. We use it in homes, schools, hospitals and factories. It provides light and heat, it drives trains, it works radio and television.





Electricity is all around us. When thunderclouds get too full of electricity they spark to Earth. Lightning is just a huge spark of electricity.

There is great power in lightning. It can split a tree, destroy a building or set it on fire.



Here is another example of natural electricity. The *Aurora Borealis*, or Northern Lights, can be seen by people living in North Polar regions. Similar lights are seen in South Polar regions.

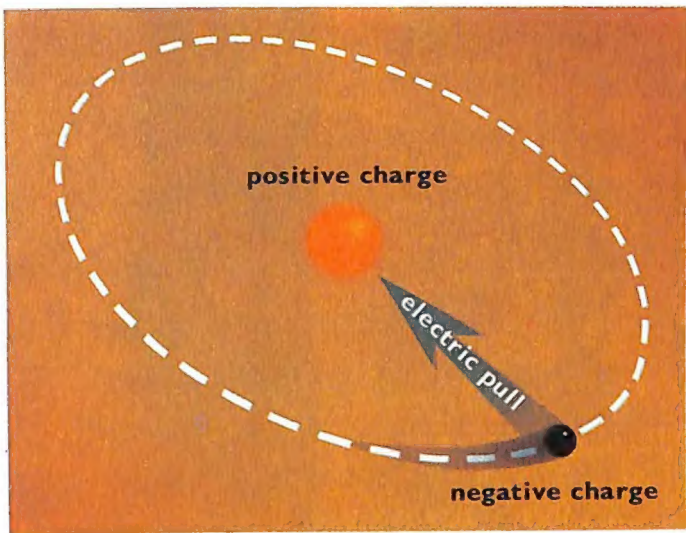
The lights are caused by electricity about 100 miles above the Earth.



Everything—even the air we breathe—is made of atoms. There are many different kinds, but each has a centre called a *nucleus*, round which move tiny particles called *electrons*.

Each part of the atom carries a small amount of electricity. The nucleus carries a *positive* electric charge and the electrons carry a *negative* electric charge.

The whole atom is held together by electricity. This is because positive and negative electric charges attract each other, just as metal is drawn to a magnet.



In this simple atom, the electron is kept near the nucleus by electric attraction, rather like the way the Earth and other planets are kept near the Sun by gravity.

If a battery is joined to a torch bulb by two wires, electricity flows along the wires to light the bulb. This flow is an electric *current*.

The wires which carry the electricity are made of millions of atoms. Because of the way the atoms are arranged in the wire the electricity flows easily through them. Metals like copper and iron, through which electricity flows easily, are called *conductors*.

In many substances, the atoms are arranged in such a way that electricity cannot flow easily through them. These are called *insulators*.





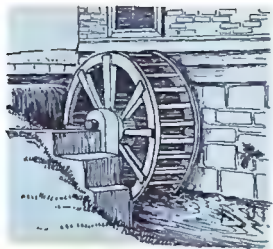
Pure rubber is a good insulator.  
That is why men who work on electric  
cables wear rubber boots.

Natural electricity is everywhere around us, but men have learned how to make electricity and how to put it to work for them. They have learned how to store it until it is needed.

An ordinary torch battery is only a container for a store of electricity. It can be small and cheap to buy. When the electricity is used, the container is of no value.

Larger storage batteries are carried in motor-cars, but as the electricity flows away a new supply is made by the engine of the car. The battery is *re-charged* with electricity.





Hundreds of years ago, men used the force of flowing water to turn the wheels of their mills.

Today, this same method is sometimes used to produce electricity. This power station uses the force of water falling down the mountain-side to turn its machines.

This is called a *hydro-electric* power station. There are many like it all over the world. They are built in countries where there are mountains and rushing rivers.





Here is another power station. The energy for making electricity comes from burning coal. The coal is brought up-river by big barges.



This is an atomic power station.  
There are few of these, but more are  
being built. In them, electricity is  
made by atomic energy.

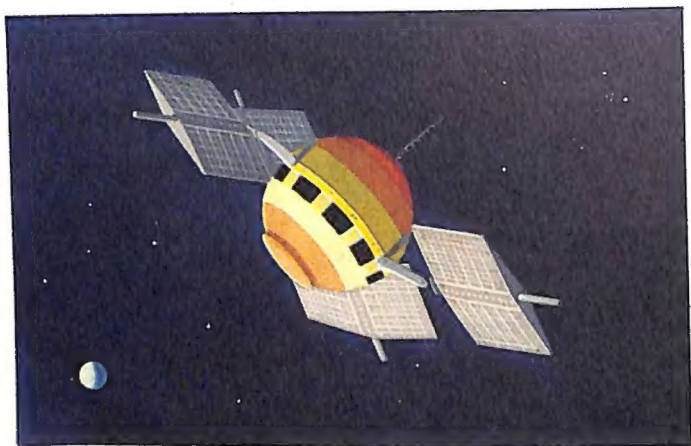


Have you wondered how the electricity from the power stations is brought to your home?

In some countries the electricity from one power station is carried by cables to serve one area. The next area is served by another power station.

In Great Britain, the electricity from all the power stations is carried into a net of cables which covers the whole country. If one power station is out of action, the others will keep the network or "grid" supplied. From the grid, many more cables reach out into homes and factories.





When light falls on some substances they give out tiny electric currents. We use these “light cells” in our space satellites instead of batteries.

In the sunlight they produce enough electricity to work the instruments in the satellites.



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# READ ABOUT SCIENCE

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Illustrated by Ric Wylam

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